



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
State Revolving Fund Loan Program
L & C Tower, 8th Floor
401 Church Street
Nashville, TN 37243

FINDING OF NO SIGNIFICANT IMPACT
Approval of Facilities Plan
Lebanon (Wilson County), Tennessee
Project No. SRF 2008-222

January 14, 2008

The National Environmental Policy Act requires federally designated agencies to determine whether a proposed major agency action will significantly affect the environment. One such major action, defined by Section 511(c)(1) of the Clean Water Act, is the approval of a facilities plan prepared pursuant to Title VI of the Clean Water Act. In making this determination, the State Revolving Fund (SRF) Loan Program assumes that all facilities and actions recommended by the plan will be implemented. The state's analysis concludes that implementing the plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this Finding of No Significant Impact (FNSI) for public review.

The City of Lebanon has completed the corrective action plan engineering report entitled "Lebanon Wastewater Treatment Plant Expansion and Collection System Improvements" dated January 2007. The engineering report provides recommendations for improvements to the wastewater treatment system serving the City of Lebanon. This project includes upgrading and expanding the City of Lebanon's existing Wastewater Treatment Plant's (WWTP) treatment capacity from 7.5 million gallons per day (MGD) to 10 MGD. The improvements consist of the construction of a new headworks structure, a screening and grit removal system, influent and effluent pump stations, sludge dewatering equipment, a blower building, two clarifiers, scum pump pumping stations, aeration basins to increase vertical capacity, odor control facilities via the addition of a biofilter, equalization diversion chamber, and a Return Activated Sludge (RAS) pump station in addition to the conversion of an existing tank to a RAS storage tank, the conversion of two existing anaerobic digesters to autothermal thermophilic aerobic digestion, the installation of a centrifuge for dewatering, the replacement of chlorine disinfection with ultraviolet disinfection, and the construction of approximately 3 miles of 30-inch diameter effluent force main in order to convey 22 MGD peak flows. The total estimated project cost is \$14,000,000. A State Revolving Fund loan in the amount of \$14,000,000 has been requested for this project.

Attached is an Environmental Assessment containing detailed information supporting this proposed action. Comments supporting or disagreeing with this proposed action received within 30 days of the date of this FNSI will be evaluated before we make a final decision to proceed. If you wish to comment or to challenge this FNSI, send your written comment(s) to:

Mr. Sam R. Gaddipati, Environmental Manager
State Revolving Fund Loan Program
Tennessee Department of Environment and Conservation
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Nashville, TN 37243

or contact him by telephone at (615) 532-0445 or by e-mail at sam.gaddipati@state.tn.us.

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A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS

This project includes upgrading and expanding the City of Lebanon's existing Wastewater Treatment Plant's (WWTP) treatment capacity from 7.5 million gallons per day (MGD) to 10 MGD. The improvements consist of the construction of a new headworks structure, a screening and grit removal system, influent and effluent pump stations, sludge dewatering equipment, a blower building, two clarifiers, scum pump pumping stations, aeration basins to increase vertical capacity, odor control facilities via the addition of a biofilter, equalization diversion chamber, and a Return Activated Sludge (RAS) pump station in addition to the conversion of an existing tank to a RAS storage tank, the conversion of two existing anaerobic digesters to autothermal thermophilic aerobic digestion, the installation of a centrifuge for dewatering, the replacement of chlorine disinfection with ultraviolet disinfection, and the construction of approximately 3 miles of 30-inch diameter effluent force main in order to convey 22 MGD peak flows. The facilities planning area and project location are indicated on Figures No. 1 and 2 of this Environmental Assessment.

FUNDING STATUS

The facilities described above comprise the scope of Clean Water State Revolving Fund Loan No. 2008-222 scheduled for funding in fiscal year 2008. The estimated project costs are summarized in the following tabulation:

<u>PROJECT CLASSIFICATIONS</u>	<u>COSTS (\$)</u>
Administrative & Legal	20,000
Design Fees	598,100
Engineering Basic Fees	149,400
Resident Inspection	280,800
Construction	12,335,000
Contingencies	616,700
TOTAL	14,000,000
State Revolving Fund Loan	14,000,000

The City of Lebanon has applied for a \$14,000,000 State Revolving Fund loan.

B. EXISTING ENVIRONMENT

The City of Lebanon's Planning Area is located in Wilson County in middle Tennessee. A discussion of existing environmental features in the area include the following:

SURFACE WATERS

Surface waters within the proposed Planning Area include the Cumberland River (Old Hickory Reservoir), and its tributaries including Barton's Creek and Sinking Creek. Designated uses for the Cumberland River include domestic water supply, industrial water supply, fish and aquatic life, recreation, irrigation, livestock watering and wildlife, and navigation. The Lebanon Water

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Treatment Plant supplies drinking water for the City of Lebanon. The raw water is obtained from a surface water intake on the Cumberland River upstream of the proposed WWTP's effluent discharge point.

GROUNDWATER

The bedrock underlying the Lebanon Planning Area is comprised of the Mississippian-age Fort Payne Formation and the Chattanooga Shale. Outcrops of limestone bedrock are common throughout most of the planning area. Sinkholes and depressions are numerous. There are no known sources of groundwater intakes for drinking water located within the proposed project area.

SOILS

Primarily, the Talbott-Gladeville-Barfield-Rock Outcrop Association occurs in the Lebanon Planning Area. Soils in the Association consist of well-drained to somewhat excessively-drained clayey and loamy soils formed in old alluvium from limestone, sandstone and shale. These soils typically have a grayish brown loam surface layer ranging from 5 inches to 60 inches in depth.

TOPOGRAPHY

The City of Lebanon's proposed Planning Area is located in the Central Basin Physiographic province and consists of gently rolling and undulating terrain crossed by numerous streams. The topography of the proposed project area ranges from 500 feet to 750 feet above mean sea level.

OTHER ENVIRONMENTAL FEATURES

Several natural areas are recognized in Wilson County for their environmental features including the Lane Farm State Natural Area and the Harding Glade Protection Planning Site. Two Tennessee State Parks, Cedars of Lebanon and Long Hunter, also contain State Natural Areas. These environmentally sensitive areas will not be affected by the proposed project. No wild or scenic rivers or unique scientific areas exist in the planning area.

C. EXISTING WASTEWATER FACILITIES

The City of Lebanon currently owns and operates a 7.5 MGD WWTP and wastewater collection system. The Lebanon facility is the only municipal WWTP in the Lebanon Planning Area. The WWTP, constructed in 1962 and last expanded in 1996, consists of manually-cleaned coarse bar screens, three influent pump stations, fine screens and grit chamber, three secondary clarifiers, two aeration basins, four effluent pump stations, chlorine contact tank, an equalization basin, and anaerobic sludge digestion. Class "A" sludge generated by the sludge digestion process is land-applied by the City of Lebanon at the state-approved Wilson County Landfill and on a farm site approved by the Division of Water Pollution Control (WPC).

The Lebanon WWTP discharges treated effluent at River Mile 252.2 of Old Hickory Reservoir at the Cumberland River. The WWTP currently operates under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN0028754, which includes the following parameters and effluent limitations:

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<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
CBOD ₅	25 milligrams per liter (mg/l)
Suspended Solids	30 mg/l
E. coli	126/100 colonies per milliliter
Dissolved Oxygen	3.0 instantaneous minimum
Chlorine Residual, Total	2.0 instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)

Lebanon's wastewater collection system consists of approximately 188 miles of 8-inch through 48-inch diameter gravity sewer, 9 pump stations with capacities ranging from 0.12 to 2.1 MGD, approximately 90,200 LF of 2-inch through 30-inch diameter force main, and approximately 2,100 manholes. Collection system pipe materials are vitrified clay, concrete, and polyvinyl chloride (PVC) pipe.

The Lebanon WWTP has repeatedly violated its NPDES Permit for suspended solids, settleable solids, fecal coliform, chlorine, dissolved oxygen, whole effluent toxicity, collection system overflows, and bypasses of treatment. Flows into the WWTP have frequently exceeded the design capacity resulting in several Notices of Violation (NOV). Extraneous flows consume sewer capacity causing overflows in the collection system and overload the treatment plant facilities. Modifications to the WWTP are needed to treat high peak flows and eliminate the sanitary sewer overflows.

D. NEED FOR PROPOSED FACILITIES AND ACTIONS

The existing WWTP has the ability to treat a peak wastewater flow capacity of 12 MGD. During rainfall events, the quantity of wastewater at the WWTP has been reported at 16 MGD during peak flow conditions. As a result of the higher flows and collection system overflows, the City of Lebanon has violated its discharge permit multiple times during the last several years resulting in several NOVs from the Division of Water Pollution Control (WPC). The Department issued a Consent Order on August 20, 2004, citing permit violations for suspended solids, settleable solids, fecal coliform, chlorine, dissolved oxygen, whole effluent toxicity, collection system overflows, and bypasses of treatment. The WWTP is in need of significant upgrade and expansion to manage peak flows that exceed the current design capacity and to improve the quality of the plant effluent.

Also, the City of Lebanon has received notification from WPC on October 23, 2003, to enact a self-imposed moratorium on new connections to the wastewater collection system. The moratorium was enacted because of excessive overflows in the wastewater collection system and for the inability of the WWTP to meet required discharge standards. WPC also required the City of Lebanon to submit an Overflow Abatement Plan to bring the WWTP into compliance with the NPDES permit and eliminate the overflows in the wastewater collection system. The Overflow Abatement Plan submitted by the City of Lebanon and approved by WPC on March 17, 2004, proposes to develop a wastewater collection system rehabilitation program, to install a computer

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system to monitor the hydraulics of the wastewater collection system, and to commence the rehabilitation of high priority projects to improve system capacity, to adequately treat 22 MGD peak flows, and to eliminate overflows. The City of Lebanon's Five Year Plan proposes to spend \$1.5 million each year through 2010 for wastewater collection system rehabilitation.

EXISTING AND PROJECTED FACILITY CONDITIONS

<u>POPULATION</u>	<u>EXISTING (2008)</u>	<u>PROJECTED (2028)</u>
City of Lebanon	23,999	39,072
% Sewered	96	100
Planning Area Excluding City of Lebanon	4,967	11,596
% Sewered	0	0
Total Planning Area	28,066	50,668
% Sewered	82	77

<u>Lebanon WWTP FLOWS (MGD)</u>	<u>EXISTING (2008)</u>	<u>PROJECTED (2028)</u>
Domestic/Commercial	1.5	2.4
Industrial	1.0	3.6
Infiltration	1.0	2.0
Inflow (during rainfall events)	1.0	2.0
TOTAL	4.5	10.0

E. ALTERNATIVES ANALYSIS

Several alternatives, including a "No-action" alternative, were evaluated for wastewater treatment and management in the January 2007 corrective action plan engineering report. A summary discussion of the evaluation of each alternative for wastewater treatment and the effluent discharge location and the selection of the recommended plan follows:

NO ACTION

The "No-action" approach was not a viable alternative. The state and federal governments have issued discharge limitations that must be met in order to maintain or improve surface water conditions. These parameters cannot be met by the facilities as they now exist. Therefore, some action must be taken to protect the environment and public health, and this alternative was rejected.

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ALTERNATIVES FOR TREATMENT

Contact Stabilization Process

This process uses separate tanks or compartments for the treatment and stabilization of the activated sludge. The stabilized activated sludge is mixed with the influent wastewater in a contact tank. The mixture is sent back to larger tanks where it is aerated so that the microorganisms can digest the waste. This alternative was not the most cost-effective for this project and was rejected.

Step-feed Aeration

This process is a modification of the conventional plug-flow process in which the settled wastewater is introduced at several points in the aeration tank to equalize the F/M ratio, thus lowering peak oxygen demand. Generally three or more parallel channels are used. This alternative was not the most cost-effective and was rejected.

Increased Equalization

This system includes the construction of new equalization facilities in addition to the current 20 million gallon equalization basin to store the untreated wastewater to be treated until such time that the WWTP has available treatment capacity. This was not the most cost-effective alternative and was rejected.

Upgrading the Existing Facility

The existing wastewater treatment facility could be upgraded to meet effluent discharge criteria by the renovation of existing units and the construction of additional units. The proposed improvements will consist of the construction of a new headworks structure, a screening and grit removal system, influent and effluent pump stations, sludge dewatering equipment, a blower building, two clarifiers, scum pump pumping stations, aeration basins to increase vertical capacity, odor control facilities via the addition of a biofilter, equalization diversion chamber, and a Return Activated Sludge (RAS) pump station in addition to the conversion of an existing tank to a RAS storage tank, the conversion of two existing anaerobic digesters to autothermal thermophilic aerobic digestion, the installation of a centrifuge for dewatering, the replacement of chlorine disinfection with ultraviolet disinfection, and the construction of approximately 3 miles of 30-inch diameter effluent force main in order to convey 22 MGD peak flows. This was the most cost-effective alternative and was selected.

F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES

The environmental benefits of this project will be the protection of public health and the environment and a reduction in permit violations and the improvement of water quality conditions in the area.

During the construction phase, short-term environmental impacts due to noise, dust, mud, disruption of traffic, runoff of silt with rainfall, etc., are unavoidable. Minimization of these impacts will be required; however, many of these minimization measures will be temporary and

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only necessary during construction. Using the following measures to prevent erosion will minimize impacts on the environment:

1. Specifications will include temporary and permanent measures to be used for controlling erosion and sediment.
2. Soil or landscaping maintenance procedures will be included in the specifications.
3. The contractor will develop an Erosion Control Plan. It will contain a construction schedule for each temporary and permanent measure controlling erosion and sediment. It will include the location, type, and purpose for each measure and the times when temporary measures will be removed or replaced.

These measures, along with requiring the contractor to return the construction site to as-good-as or better-than its original condition, will prevent any adverse impacts due to erosion.

No endangered species of flora or fauna were identified within the proposed construction corridor. Effects on flora and fauna will be confined and temporary.

G. PUBLIC PARTICIPATION; SOURCES CONSULTED

A Public Meeting was held on September 27, 2007, at 5:00 p.m., local time. The selected plan for wastewater collection and treatment and user charges were described to the public, and their input was received. This agency is not aware of any unresolved public objections that may have been voiced before or after the public meeting regarding this project.

The annual median household income for the City of Lebanon is \$44,101. Sewer rates for the typical commercial/residential user (5,000 gallons per month) are \$29.46. The existing user charges are projected to be sufficient to repay the SRF loan. Therefore, no incremental increase in user charges will be required.

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Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development (ECD)
3. Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control (DAPC)
4. Tennessee Department of Transportation (TDOT)
5. TDEC, Division of Groundwater Protection (DGWP)
6. Tennessee Historical Commission
7. TDEC, Division of Archaeology (DA)
8. TDEC, Division of Natural Areas (DNA)
9. TDEC, Division of Solid Waste Management (DSWM)
10. TDEC, Division of Water Pollution Control (DWPC)
11. TDEC, Division of Water Supply (DWS)
12. Tennessee Wildlife Resources Agency (TWRA)
13. United States Army Corps of Engineers (USACE)
14. United States Fish and Wildlife Service (USF&W)
15. City of Lebanon
16. Wilson County
17. Water Management Services

H. SPECIAL CONDITIONS

The State Revolving Fund loan agreement will have the following special condition:

The Division of Natural Areas requires that a biological assessment be conducted for the federally-endangered Spring Creek bladderpod (*Lesquerella perforata*). Copies of the assessment and findings must be submitted to the United States Fish and Wildlife Service, Division of Natural Areas, State Revolving Fund Loan Program.